

A new species of *Chaerilus* Simon, 1877 (Scorpiones, Chaerilidae) from China

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Abstract — A new species, *Chaerilus mainlingensis* sp. nov., is described from Xizang in China. The present new species is distinguished from the congeners by chela with width/length ratio more than 2.4, seven rows of denticles on fixed and movable fingers of pedipalp chelae, three or four pectinal teeth in females, and almost smooth teguments of the seventh sternite and all of the metasomal segments.

Key words — Chaerilid, *Chaerilus*, China, new species, scorpion, taxonomy, Xizang

Introduction

Chaerilidae differs from the other families in Scorpiones in having type B trichobothrial patterns instead of type A, type C and type D patterns in other families (Vachon 1974; Sologlad & Fet 2001).

According to the Catalog of Scorpions of the World (Fet 2000), Chaerilidae includes 21 species in the single genus *Chaerilus* Simon, 1877. Kovařík (2000) listed 18 valid species in the genus. Recently the taxonomy of *Chaerilus* was discussed by several researchers (Fet 2003; Qi, Zhu & Lourenço 2005; Lourenço & Zhu 2008; Lourenço & Ythier 2008; Zhu, Han & Lourenço 2008; Lourenço 2009), and the congeners were increased to 27 species as follows: *C. agilis*, *C. assamensis*, *C. cavernicola*, *C. celebensis*, *C. ceylonensis*, *C. chapmani*, *C. conchiformis*, *C. insignis*, *C. laevimanus*, *C. laoticus*, *C. lehtrarensis*, *C. petrzelkai*, *C. ojangureni*, *C. philippinus*, *C. pictus*, *C. rectimanus*, *C. robinsoni*, *C. sabinae*, *C. sejnai*, *C. telnovi*, *C. tessellatus*, *C. tichyi*, *C. tricotatus*, *C. truncatus*, *C. tryznai*, *C. variegatus* and *C. vietnamicus*. Among above mentioned species, so far, four species have been recorded from the Xizang region in China: *C. conchiformis*, *C. pictus*, *C. tessellatus* and *C. tryznai* (Zhu, Han & Lourenço 2008). *Chaerilus mainlingensis* is the fifth *Chaerilus* species found from China (Fig. 17).

Methods

Illustrations and measurements were made using a TTL-II stereomicroscope with an Abbe drawing tube and an ocular micrometer. Measurements followed Sissom (1990) and were given in mm. Trichobothrial notations followed Vachon (1974) and morphological terminology mostly followed Hjelle (1990). The terminology of metasomal carination followed Vachon (1952) and the terminology of pedipalp chelal carinae followed Prendini (2000) and Sologlad & Sissom (2001). The type series were deposited

in the Museum of the College of Life Sciences, Hebei University (MHBUS), China.

Taxonomy

Family Chaerilidae Pocock, 1893

Genus *Chaerilus* Simon, 1877

Chaerilus Simon 1877, 238; Kraepelin 1899, 157; Pocock 1900, 53; Vachon 1974, 912; Fet 2000, 323; Kovařík 2000, 38; Kovařík 2005, 1; Qi, Zhu & Lourenço 2005, 29; Lourenço & Zhu 2008, 462.

Type species. *Chelomachus birmanicus* Thorell, 1889 (= *C. variegatus* Simon, 1877).

Diagnosis. All four teeth on the fixed finger of chelicerae are distinct (i.e., the median and basal teeth do not form a bicuspid): the movable finger has one subdistal and one basal teeth on the external margin; the external distal tooth smaller than the internal one; the internal margin with distinct serration or a row of small teeth. The trichobothrial pattern is Type B. The coxapophyses have broadly expanded anterior lobes. The sternum is subpentagonal. The legs lack tibial spurs, but both prolateral and retrolateral pedal spurs are present. Tarsi bear two rows of ventral setae and a median row of spinules. The telson is without a subaculear tubercle (Qi, Zhu & Lourenço 2005).

Chaerilus mainlingensis sp. nov.

(Figs. 1–16)

Type material. Holotype, female, CHINA: Xizang, Mainling County, the Estate of Gongbuwang, 12/VII/2008, Zhi-Yong Di and Guo-Dong Ren leg. (Ar.-MHU-XZML0801); paratype: 1 female, same data as holotype (Ar.-MHU-XZML0802) (in MHBUS).

Diagnosis: The new species differs from the other congeners by the following features: about 40 mm in total length;

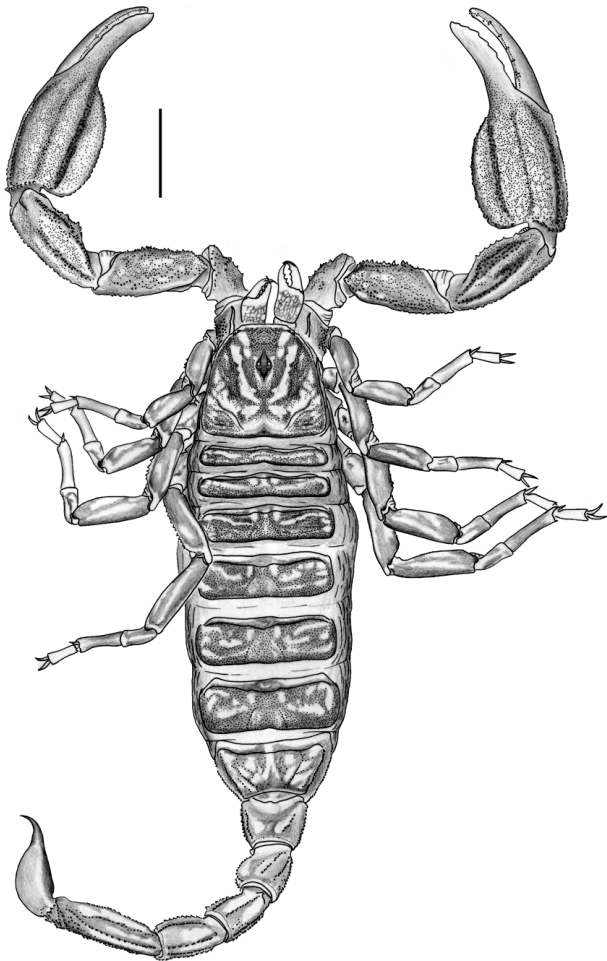


Fig. 1. *Chaerilus mainlingensis* sp. nov., female holotype. — habitus. Scale bar = 5 mm.

carapace with the anterior margin weakly concave, furrows moderately deep; metasomal carinae moderately to strongly granular; chela with more than 2.4 length/width ratio; dentate margins of fixed and movable fingers of pedipalp chela with seven rows of granules; three or four pectinal teeth in females. *C. mainlingensis* sp. nov. can be distinguished from the geographically and morphologically close related species: *C. insignis*, *C. pictus*, *C. truncates* and *C. tryznai*, by the following features: (1) dorsal secondary carinae of the chela obsolete as a black stripes without ridges (Fig. 11), while they have distinct ridges in *C. pictus*, *C. tryznai*, *C. insignis* and *C. truncates*; (2) chela with 2.4 length/width ratio (female holotype 2.4, female paratype 2.75), where is higher 3.3 in *C. insignis*; (3) the seventh sternite and all segments of metasoma with almost smooth tegument, while there is a coarse tegument in *C. tryznai*; (4) movable fingers of pedipalp chela with 7 rows of granules, where is 13–14 in *C. pictus*, 9–13 in *C. truncates*, 10–12 in *C. insignis*; Males are unknown.

Etymology. The specific name refers to the type locality, Mainling County.

Description. based on female holotype

Coloration. Basically blackish brown to red brown. Carapace blackish brown. Mesosomal tergites reddish brown with yellowish stripes. Metasoma: all segments blackish, with some dark pigments on carinae. Telson light brown; aculeus light brown at the base and dark red brown at the extremity. Chelicerae yellowish with dark reticular pattern on dorsal surface of chela; the fingers with darker denticles. Pedipalps: femur, patella and chela dark red-brown. Legs from red brown to yellow on proximal segments and yellowish on distal segments. Sternum, genital operculum, venter and sternites pale brown. Pectines yellowish.

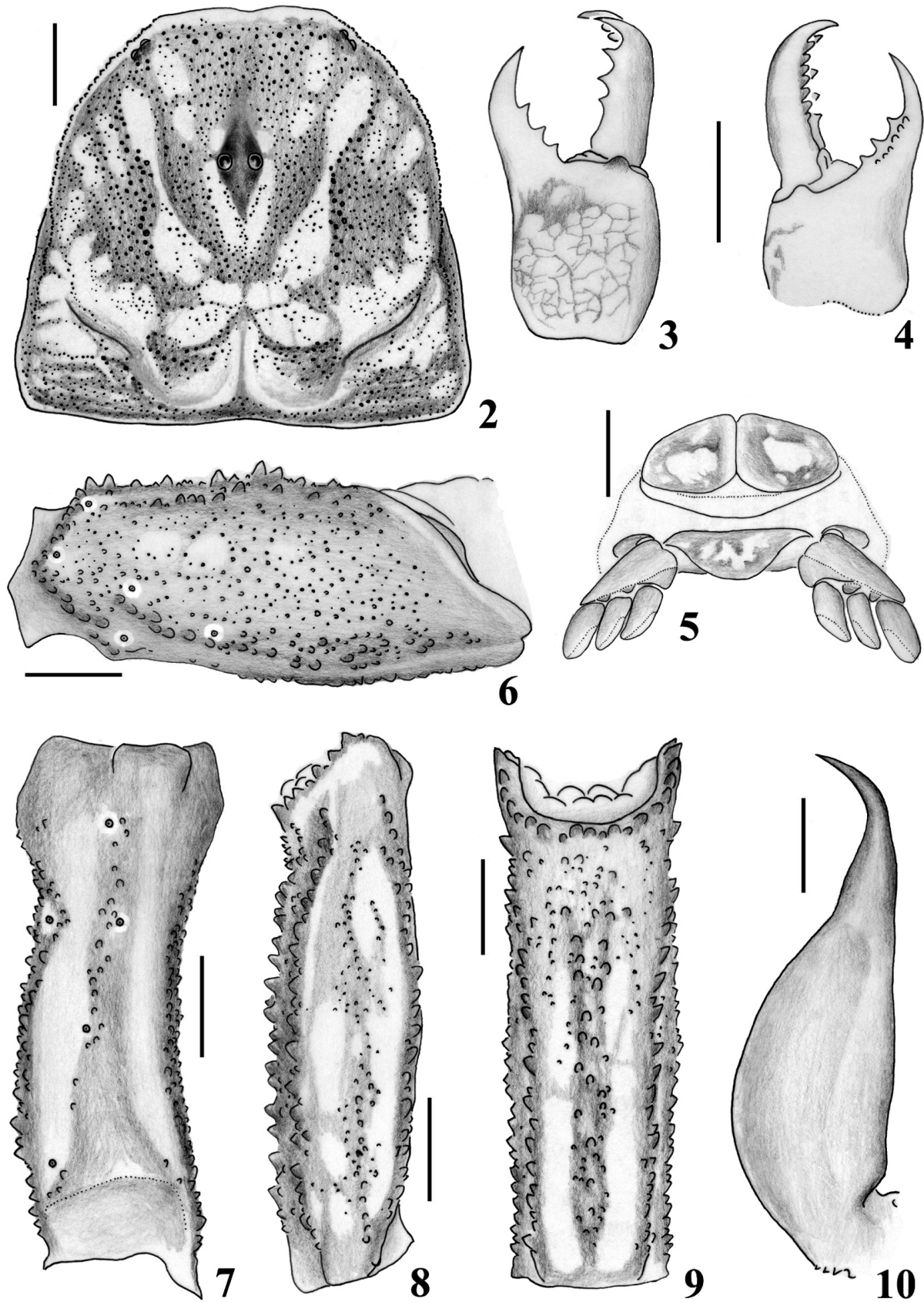
Morphology. Carapace carinated, with sparse granules of unequal size; lateral furrow deep and distinct; lateral carinae well developed. Median ocular tubercle with granules; these granules are located anterior to the center of the carapace. Lateral ocular tubercle small with a pair of lateral eyes. Lateral eyes distinctly smaller than median eyes.

Mesosoma: tergites sparsely with granules of larger and unequal size; tergites I to III without carinae, each of tergites IV to VI bearing a pairs of obsolete granular carinae on posterior margin, tergite VII bearing two pairs of dentated lateral carinae, but inner pair is short and not developed; sternum pentagonal; pectinal teeth count 3/3, with fulcra moderately developed; sternites III to VI are smooth, sternite VII with some small granules on posterior portion and with four distinct carinae.

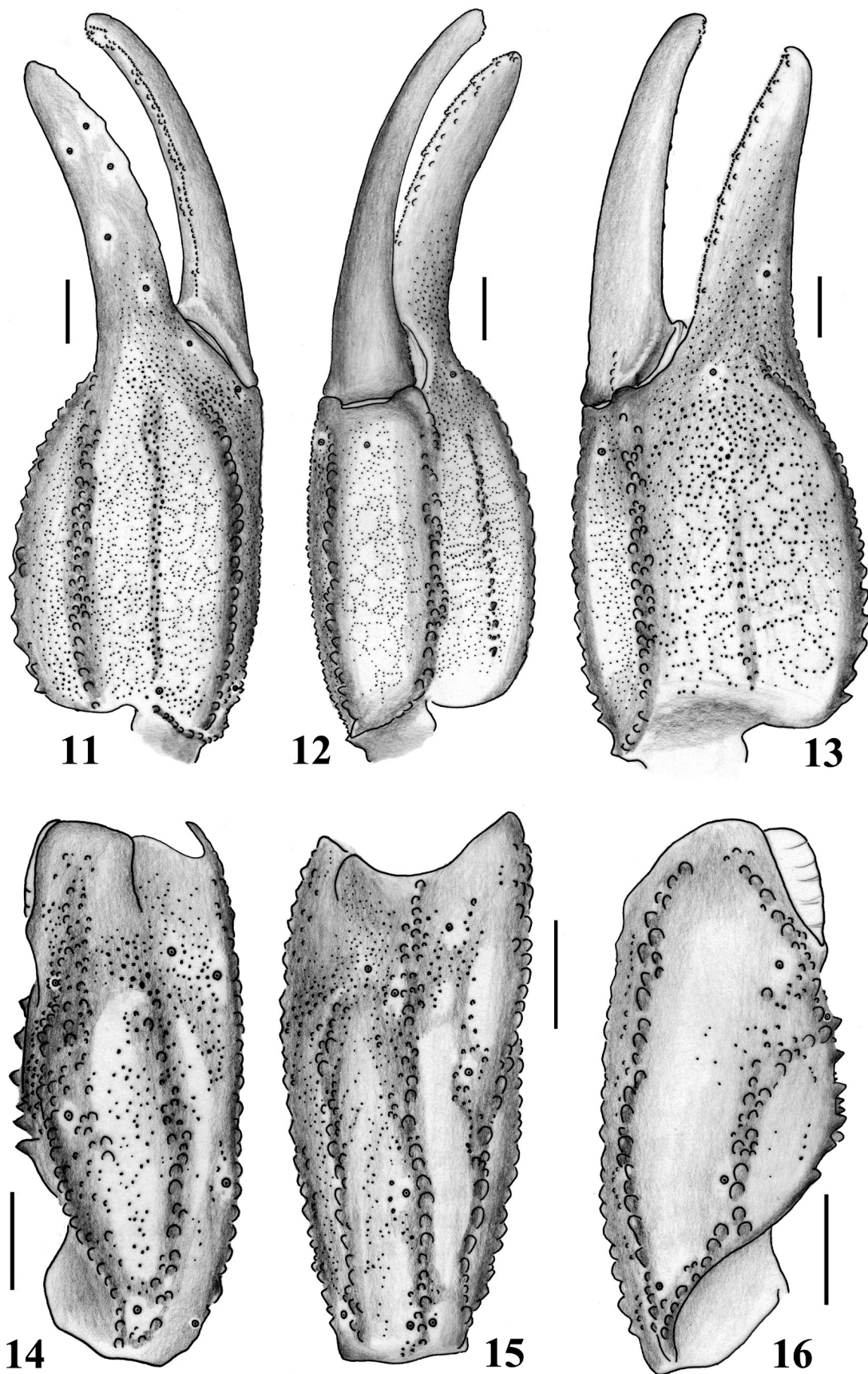
Metasoma length about 4.5 times as long as carapace; segment I always wider than long; segments I to V with 10-8-8-8-7 carinae; the ventromedian and ventrolateral carinae of segment V composed of strong, dentated granules, ventromedian carina posteriorly bifurcated as “Y”; all segment with sparse granules on the lateral tegument, and so few granules that almost smooth on the dorsal and ventral surfaces. Vesicle is almost smooth; aculeus slightly curved (Fig. 10).

Chelicerae: chela bearing dark brown retiform stripe, ventral surface smooth; thickly covered with numerous short, silky setae, extending to ventral aspect of chelicerae and dorsal aspect of fixed fingers; ventral inner edges of movable finger with six medium-size teeth and one or two obsolete small teeth.

Pedipalp: femur with ventral external, external and dorsal external carinae, which smooth granular; ventral internal, internal and dorsal internal carinae cusped granular; external surface smooth, other surfaces are covered with sparse and coarse granules; patella with dorsal internal, dorsal external, external, ventral internal, ventral external carinae, with smooth granular; internal carina with cusped granular; internal surface smooth, other surfaces with sparse and coarse granules; chela with moderate length and width, the length/width ratio more than 2.4; dorsal internal, digital, dorsal external, ventral internal, ventral external carinae with smooth granular; external secondary, external and interomedian carinae obsolete or vestigial; entire tegument of chela manus densely covered with coarse granules, forming some



Figs. 2–10. *Chaerilus mainlingensis* sp. nov., female holotype. — 2, carapace, dorsal aspect; 3–4, chelicera, dorsal and ventral aspects; 5, genital operculum and pectines; 6–7, femur, dorsal and external aspect; 8–9, metasomal segment V, lateral and ventral aspects; 10, telson. Scale bars = 1 mm.



Figs. 11–16. *Chaerilus mainlingensis* sp. nov., female holotype. — 11–13, chela dorsoexternal, ventral and internal aspects; 14–16, palpus, dorsal, external and ventral aspects. Scale bars=1 mm.

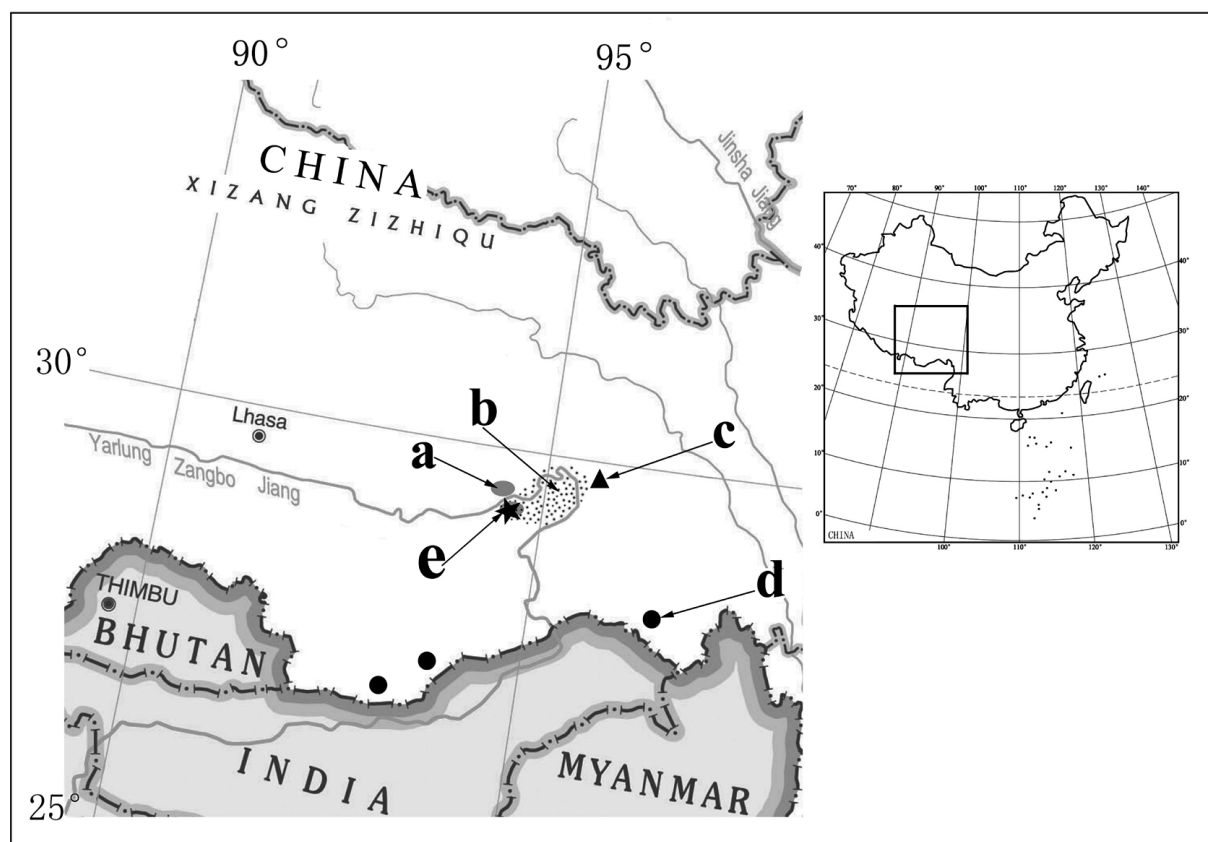


Fig. 17. Map of China (Tibet), showing the localities of the *Chaerilus* species. Map abbreviations: a (ellipse). *C. conchiformis*; b (macula) *C. tessellatus*. c (triangle) *C. tryznai*. d (round) *C. pictus*. e (pentagram) *C. mainlingensis*.

indistinct reticular pattern; fingers straight, the cutting edge of movable finger with seven rows of granules. Trichobothriotaxy of type B; orthobothriotaxic (Vachon 1974); femur with nine trichobothria, patella with 14, and chela with 14 trichobothria (Figs. 6–7, 11–16).

Measurements (in mm):

Female holotype: Total length, 40.4. Carapace: length, 5.3; anterior width, 2.8; posterior width, 5.8. Mesosomal segments length, 11.8. Metasomal segment I: length, 2.6; width, 3.2. Metasomal segment V: length, 5.7; width, 1.8; depth, 1.6. Telson: length, 5.5; width, 2.1; depth, 1.7. Pedipalp: femur length, 5.5, width, 2.2; patella length, 5.4, width, 2.3; chela length, 10.3, width, 4.3, depth, 3.2; movable finger length, 5.9.

Female paratype: Total length, 40.7. Carapace: length, 5.4; anterior width, 3.1; posterior width, 5.9. Mesosomal segments length, 12.6. Metasomal segment I: length, 2.6; width, 3.2. Metasomal segment V: length, 5.5; width, 2.0; depth, 1.5. Telson: length, 5.9; width, 2.2; depth, 1.8. Pedipalp: femur length, 5.9, width, 2.4; patella length, 5.6, width, 2.3; chela length, 11.2, width, 4.1, depth, 3.2; movable finger length, 6.3. Pectinal teeth (left/right), 4/3.

Variation. The number of pectinal teeth (left/right): 3/3 or 4/3. The coloration and morphology are not variable in females.

Habitat. Found under the stones of mixed forest.

Distribution. China (Xizang) (Fig. 17).

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